# 6785   Biker

Barry the biker is planning a trip across the country on his motorcycle. His goal is to travel from his house and get to the east coast of the country. During the whole journey, Barry only travels East (never West). All of the roads are straight lines and there are no roads running north-south (that is, there are no vertical lines). The biker wants to see as many sites as possible, so whenever the biker reaches the intersection of two roads, he turns (i.e., he leaves the current road and starts traveling on the other road while keeping his direction to the East).

However, Barry loves to speed — and there are many speed cameras set up throughout the country. Given Barry's strategy, what is the first speed camera that Barry will pass by (if any)? In the following example, Barry would get caught by two cameras, but we only care about the first camera to catch him.
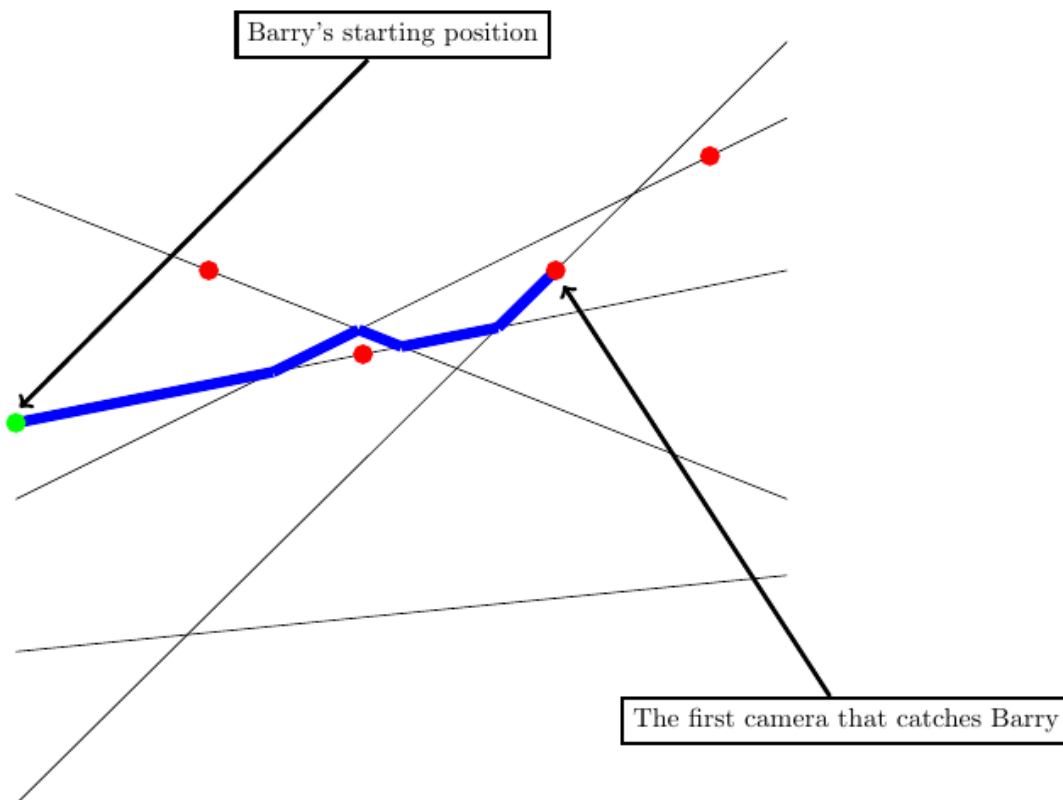
The roads are infinite lines and three roads will never meet at one location. The speed cameras and Barry's staring position will not be on an intersection.

Input

The first line of the input will contain a positive integer T denoting the number of test cases to follow. Each test case will start with two integers n ($1 \le n \le 10^5$) and k ($1 \le k \le 100$) denoting the number of roads and cameras, respectively.

The next n lines will contain the two real numbers, m and b ($-10^8 \le m, b \le 10^8$), representing the slope and y-intercept of the road, respectively (that is, the equation of the line would be $y = mx + b$). The next k lines contain two numbers. The first is an integer i ($1 \le i \le n$) denoting which line this

camera is on and the second is a real number representing the x-coordinate of the camera. The last line contains two numbers representing Barry's house (in the same format as the cameras).

Every coordinate given in the input will have absolute value no more than 10^8. All intersection points, Barry's house and cameras are all pairwise distinct.

Output

For each test case, output the number of the camera that Barry will get caught by first. The first camera in the input is camera 1, the second in the input is camera 2, etc. If Barry never gets caught by a camera, output '-1'.

Sample Input

```
1
5 4
2 0
5 -10
-4 30
10 -50
1 -30
3 2.5
1 4.5
4 7
2 9
1 0
```

Sample Output

```
3
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